AMENDMENTS TO THE CLAIMS:

Claims 74 and 76-95 are pending in the present application.

Please amend claims 74, 78, 81, 84, and 91, as follows:

74. (currently amended) A method of identifying a peptide with ~~a predicted indicia of~~ an activity that satisfies a test requirement, comprising the steps of:

selecting a first test peptides library using a space-filling design wherein the length of said test peptides comprises no greater than twenty amino acids;

determining ~~a first indicia of~~ an activity of ~~a plurality of~~ said first test peptides from ~~a~~ said first test peptide library;

~~selecting said first peptides using a space-filling design~~

measuring an indicia of said activity of a plurality of said first test peptides from said first test peptide library;

determining a relationship between the ~~first~~ indicia of the activity and at least two parameters ~~of the plurality~~ of said first test peptides, wherein one parameter is a whole molecule parameter and an additional parameter is a sequence-specific parameter~~, and further wherein the length of said test peptides comprises no greater than twenty amino acids~~x;

setting a test requirement that is greater than, equal to or lower than the indicia that describes the desired activity;

determining a second peptide library containing a plurality of second test peptides that based upon said relationship are predicted to satisfy said test requirement ~~relating to the measured first indicia~~; and

identifying at least one peptide from ~~a~~ said second peptide library ~~containing a plurality of second peptides which based on said relationship, are expected to provide an indicia of activity~~ that satisfies said test requirement.

76. (previously amended) The method of claim 74, wherein said step of determining a relationship comprises the step of determining $\hat{y}_i = f(x_{ij})$, where x_{ij} denotes a whole molecule parameter, i ranges from 1 to n where n represents the number of first test peptides in the plurality thereof, j ranges from 1 to d where d represents the number of whole molecule

parameters, and $\hat{y}_i$ represents an estimate of the measured first indicia of the activity of the plurality of first test peptides.

77. (previously amended) The method of claim 76, wherein said step of determining a test requirement comprises:

quantifying or qualifying the range of an indicia of an activity, wherein for said activity, the quantified or qualified indicia is greater than the indicia of the first library or less than the indicia of the first library.

78. (currently amended) The method of claim 77, wherein said ~~identifying~~quantifying or qualifying step further comprises:

determining which of the estimated indicia satisfy the quantified or qualified range of the indicia; and

determining from the estimated indicia that satisfy said range, at least one peptide from the plurality of second peptides comprising the second peptide library.

79. (original) The method of claim 76, wherein $f(x_{ij})$ is a non-parametric regression formula.

80. (previously amended) The method of claim 74, wherein said step of determining a relationship comprises the step of:

determining a distance function $d(x_1, x_2)$ between a first value of a whole molecule parameter, x_1, of a first test peptide and a second value of the whole molecule parameter, x_2, of a second peptide not within the first test peptide library; and

estimating the indicia of the activity of the second peptide as the indicia of the activity of the first test peptide if $d(x_1, x_2) \leq d_{cutoff1}$, where $d_{cutoff1}$ is a cutoff distance for the first test peptide.

81. (currently amended) The method of claim 74, wherein said step of determining ~~first indicia~~an activity ~~step~~ is preceded by the step of defining a first test peptide library by

representing each of a plurality of groups of peptides as peptides sharing common global characteristics from a first peptide space as a respective candidate peptide.

82. (previously amended) The method of claim 81, further comprising the step of expanding less than all of the candidate peptides determined in said representing step into their constituent compound isomers using a space-filling design.

83. (previously amended) The method of claim 74, wherein said whole molecule parameter is selected from the group consisting of total charge, molecular weight, isoelectric point and total dipole moment.

84. (currently amended) The method of claim 74, wherein said whole molecule parameters ~~are~~ is selected from the group consisting of total charge, molecular weight, isoelectric point and total dipole moment, and further wherein said sequence specific parameter is selected from the group consisting of isotropic surface area, electronic charge index and hydrophobicity.

85. (previously amended) The method of claim 74, wherein said sequence-specific parameter is selected from the group consisting of isotropic surface area, electronic charge index and hydrophobicity.

86. (previously amended) The method of claim 74, wherein said whole molecule parameter is molecular weight and at least one additional parameter selected from the group consisting of total charge, isoelectric point, total dipole moment, isotropic surface area, electronic charge index, and hydrophobicity.

87. (original) The method of claim 74, wherein the activity is binding to a receptor.

88. (original) The method of claim 74, wherein the activity is enhancement or inducement of a biological activity in a cell.

89. (original) The method of claim 74, wherein the activity is inhibition or prevention of a biological activity in a cell.

90. (original) The method of claim 88 or claim 89, wherein the cell is a cell cultured in vitro.

91. (~~original~~currently amended) The method of claim 90, wherein ~~said~~ the step of measuring ~~first~~ an indicia ~~of the~~ said activity comprises:

forming a plurality of culture media that each contains a respective test peptide from the plurality thereof; and

adding each of the plurality of culture media to a respective cell culture to form a plurality of cell cultures each containing a respective culture medium containing a respective first test compound.

92. (original) The method of claim 74, wherein the activity is inhibition or prevention of activation of a receptor.

93. (original) The method of claim 74, wherein the activity is enhancement or inducement of activation of a receptor.

94. (previously amended) The method of claim 74, wherein the first test peptide library consists of peptides having a length of no less than four amino acids.

95. (previously amended) The method of claim 74, wherein the test peptide library consists of peptides having a length of no more than ten amino acids.